



BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Berkley

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

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* Depending on the location of Core Habitats, your city or town may not have all of these sections.

Spring Salamander
(*Gyrinophilus porphyriticus*)
Species of Special Concern



Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.



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Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
 - * Field guides
 - * Natural Heritage Atlas, and more!



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BioMap: Species and Natural Communities

Berkley

Core Habitat BM1213

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Small Site for Rare Plant		

Core Habitat BM1215

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Small Site for Rare Plant		

Core Habitat BM1229

Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Acidic Graminoid Fen		Vulnerable
Acidic Shrub Fen		Vulnerable
Alluvial Atlantic White Cedar Swamp		Imperiled
Alluvial Red Maple Swamp		Vulnerable
Atlantic White Cedar Bog		Imperiled
Coastal Atlantic White Cedar Swamp		Imperiled
Coastal Plain Pondshore		Imperiled
Forest Seep Community		Secure
Maritime Oak - Holly Forest/Woodland		Critically Imperiled
Mixed Oak Forest		Secure
Pitch Pine - Oak Forest/Woodland		Secure
Pitch Pine - Scrub Oak Community		Imperiled
Ridgetop Chestnut Oak Forest/Woodland		Secure
Sandplain Heathland		Critically Imperiled
Scrub Oak Shrubland		Critically Imperiled



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BioMap: Species and Natural Communities

Berkley

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Climbing Fern	<i>Lygodium palmatum</i>	Special Concern
Gypsywort	<i>Lycopus rubellus</i>	Endangered
Long-Leaved Panic-Grass	<i>Panicum rigidulum ssp pubescens</i>	Threatened
Long's Bulrush	<i>Scirpus longii</i>	Threatened
Philadelphia Panic-Grass	<i>Panicum philadelphicum</i>	Special Concern
Plymouth Gentian	<i>Sabatia kennedyana</i>	Special Concern
Rigid Flax	<i>Linum medium var texanum</i>	Threatened
Swamp Oats	<i>Sphenopholis pensylvanica</i>	Threatened
Tiny-Fruited Spike-Sedge	<i>Eleocharis microcarpa var. filiculmis</i>	Endangered
Weak Rush	<i>Juncus debilis</i>	Endangered

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Attenuated Bluet	<i>Enallagma daeckii</i>	Special Concern
Barrens Buckmoth	<i>Hemileuca maia</i>	Special Concern
Chain Dot Geometer	<i>Cingilia catenaria</i>	Special Concern
Chain Fern Borer Moth	<i>Papaipema stenocelis</i>	Threatened
Frosted Elfin	<i>Callophrys irus</i>	Special Concern
Hessel's Hairstreak	<i>Callophrys hesseli</i>	Special Concern
New England Bluet	<i>Enallagma laterale</i>	Special Concern
Pale Green Pinion Moth	<i>Lithophane viridipallens</i>	Special Concern
Sensitive Rare Invertebrate		
Water-Willow Stem Borer	<i>Papaipema sulphurata</i>	Threatened

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern



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BioMap: Species and Natural Communities

Berkley

Marbled Salamander

Ambystoma opacum

Threatened

Northern Parula

Parula americana

Threatened

Spotted Turtle

Clemmys guttata

Special Concern



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BioMap: Core Habitat Summaries

Berkley

Core Habitat BM1229

This large Core Habitat in and east of Fall River contains extensive, diverse, and important habitats for Massachusetts' rare plants and animals. The many natural communities of this Core Habitat range from wetlands, such as Coastal Atlantic White Cedar Swamps, to a dry upland Pitch Pine-Scrub Oak community. This Core Habitat is a significant site for several species of rare turtles and salamanders, as well as for invertebrate species of rare moths, butterflies, dragonflies, and damselflies. The habitat diversity here also supports several rare plant species, including the only two populations of the Endangered Tiny-Flowered Spike-Sedge in the state. This Core Habitat represents one of the best remaining opportunities to conserve an important, large, and minimally fragmented area of natural land in eastern Massachusetts.

Natural Communities

Throughout the seven towns included in this Core Habitat, there is excellent diversity of natural communities, ranging from forested swamps and bogs, to a dry upland Pitch Pine-Scrub Oak community. Of interest is the abundance of large and diverse Coastal Atlantic White Cedar Swamps of excellent quality. Coastal Atlantic White Cedar Swamps are acidic, low nutrient basin swamps dominated by Atlantic White Cedar in the overstory and a mixture of species in the understory. This community type typically occurs in basins on the Atlantic Coastal Plain. Of further note in this Core Habitat: the state's second-largest and very high-quality Alluvial Atlantic White Cedar Swamp, several high-quality Forest Seep communities, and a very good Acidic Graminoid Fen.

Plants

This large Core Habitat contains several rare plant species growing within a variety of habitat types. The only two known populations of the Endangered Tiny-Fruited Spike-Sedge in the state are found growing within sedge meadow habitat. Two high-quality populations of the Climbing Fern are found in swampy open woodlands. The globally rare Long's Bulrush is found within an acidic basin fen habitat. Two rare Panic-Grasses have colonized early-successional areas within a powerline. Clearly the diversity of habitats present within this Core Habitat contributes to the diversity of rare plant species found within this area.

Invertebrates

An extensive network of wetlands within this Core Habitat, including Coastal Plain ponds, bogs, and acidic swamps vegetated with Atlantic White Cedar and various shrubs, provide important habitat for a number of rare invertebrate species such as Hessel's Hairstreak butterfly, moths such as the Chain Fern Borer and the Pale Green Pinion moth, and rare dragonflies and damselflies such as the Attenuated Bluet damselfly and the New England Bluet damselfly. In addition, patches of pitch pine - scrub oak barrens habitat such as are found at Noquochoke Wildlife Management Area provide habitat for rare butterflies and moths such as the Frosted Elfin and the Barrens Buckmoth.



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BioMap: Core Habitat Summaries

Berkley

Vertebrates

This Core Habitat has some of the best potential of any in the state to support viable populations of Eastern Box Turtles, Spotted Turtles, Four-toed Salamanders, and Marbled Salamanders over the long-term. Northern Parula warblers may also be present here. The area also contains some of the most important forested wetland habitat for wildlife in the state, with both Atlantic White Cedar and Red Maple Swamps.



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Living Waters: Species and Habitats

Berkley

Core Habitat LW080

Fishes

Common Name

Scientific Name

Status

Atlantic Sturgeon

Acipenser oxyrinchus

Endangered



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Living Waters: Core Habitat Summaries

Berkley

Core Habitat LW080

This Core Habitat provides key habitat for one of two populations of the state-Endangered Atlantic Sturgeon in the Commonwealth. The largest of Massachusetts' freshwater fishes, the Atlantic Sturgeon is a prehistoric-looking fish, with bony plates along its side. More studies are needed in the Taunton River to identify spawning (breeding) areas for this species.



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To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.